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=> d his

     (FILE 'HOME' ENTERED AT 16:58:08 ON 04 MAY 2004)
     FILE 'CA' ENTERED AT 16:58:19 ON 04 MAY 2004
L1             74 S (TOXIC? OR HAZARD?)(5A)(RUO2 OR RUO4 OR IRO4 OR RUTHEN?)
L2             59 S L1 NOT PY>1999
L3              5 S L2 AND (WORK? OR MANUFACT? OR INDUSTR? OR POLLUT?)
     FILE 'BIOSIS' ENTERED AT 17:05:15 ON 04 MAY 2004
L4             19 S L2
L5              2 S L4 AND ACUTE
     FILE 'MEDLINE' ENTERED AT 17:07:44 ON 04 MAY 2004
L6             13 S L2

=> d bib,ab 1-5 l3

L3   ANSWER 1 OF 5  CA  COPYRIGHT 2004 ACS on STN
AN   95:48278  CA
TI   Working conditions and the state of health of workers in contact with
     some ruthenium compounds
AU   Akinfieva, T. A.; Solntseva, N. A.; Speranskaya, M. S.; Fedorenko, V.
     D.
CS   I Med. Inst. im. Sechenova, Moscow, USSR
SO   Gigiena Truda i Professional'nye Zabolevaniya (1981), (2), 44-5
LA   Russian
AB   Studies of working conditions at the plants for manufg. and using Ru
     compds. indicated that the workers are influenced by a complex of
     adverse effects, the most important of which is air pollution by Ru
     compds.  An allergic reaction of the skin is 1 of the earliest
     indications of the effect of Ru on the human organism.  Disorders of
     the upper respiratory ducts are attributed to sol. Cl-contg. Ru
     compds., as well as RhO2.

L3   ANSWER 2 OF 5  CA  COPYRIGHT 2004 ACS on STN
AN   95:19077  CA
TI   Basis for the maximum allowable concentration of ruthenium dioxide in
     the air of work areas
AU   Akinfieva, T. A.
CS   Med. Inst. im. Sechenova, Moscow, USSR
SO   Gigiena Truda i Professional'nye Zabolevaniya (1981), (1), 46-7
LA   Russian
AB   The LD50 of RuO2 in rats was 4580 mg/kg, and mice 5570 mg/kg.  At 21.4
     mg/m3, RuO2 caused morphol. and functional changes in a no. of organs.
     The effect on the liver was reflected by changes in the content of
     serum proteins, increased content of lactic acid  [50-21-5], and
     enhancement in the activity of alk. phosphatase  [9001-78-9]; blood
     urea  [57-13-6] N was also increased.  The upper respiratory tract and
     lung were very much affected by RuO2.  Thus, 21.4 mg/m3 dose of RuO2
     was quite toxic.  The recommended max. permissible concn. of RuO2 in
     the working zone is 1 mg/m3.

L3   ANSWER 4 OF 5  CA  COPYRIGHT 2004 ACS on STN
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AN   86:60011  CA
TI   Nasal ulceration in workers exposed to ruthenium and platinum salts
AU   Harris, S.
CS   Wolverhampton, UK
SO   Journal of the Society of Occupational Medicine (1975), 25(4), 133-4
AB   Nasal ulceration or perforation can be caused by exposure to Ru salts.
     These ulcers eventually disappear in the absence of further exposure
     unlike those caused by Cr salts.  Pt salts can cause allergic rhinitis
     or asthmatic attacks but not ulcerations of the nose.

=> log y
STN INTERNATIONAL LOGOFF AT 17:09:31 ON 04 MAY 2004

=> d his

     (FILE 'HOME' ENTERED AT 14:57:28 ON 04 MAY 2004)
     FILE 'CA' ENTERED AT 14:57:40 ON 04 MAY 2004
L1   99295 S (TOXIC? OR HAZARD? OR RUO2 OR RUO4 OR IRO4 OR
           RUTHEN?)(7A)(DETECT? OR DETERMIN? OR ASSAY? OR ANALY? OR ASSES? OR
           TEST? OR MEASUR? OR MONITOR? OR ESTIMAT? OR EVALUAT? OR EXAMIN? OR
           SENSE# OR SENSING OR SENSOR OR IDENTIF? OR PROBE# OR PROBING OR
           QUANTIF? OR QUANTITAT? OR CHECK?)
L2      79 S L1 AND(CVD OR VAPOR DEPOSITION)
L3     875 S L1(L)(REACTOR OR REACTION(2A)(CHAMBER OR CONTAINER OR SPACE))
L4      13 S L3 AND ELECTRODE
L5      92 S L2,L4
L6      46 S L5 NOT PY>1999
L7      10 S L5 NOT L6 AND PATENT/DT
L8      56 S L6-7
L9      25 S L3 AND(LEAK? OR ESCAP?)
L10     24 S L9 NOT L5
L11     22 S (L10 NOT PY>1999)OR(L10 AND PATENT/DT)

=> d bib,ab 1-56 l8

L8   ANSWER 8 OF 56  CA  COPYRIGHT 2004 ACS on STN
AN   135:250425  CA
TI   Method and apparatus for simulating standard test wafers
IN   Goldspring, Gregory J.; O'donnell, Robert J.
PA   Lam Research Corporation, USA
SO   U.S., 8 pp.
PI   US 6296778         B1    20011002       US 1999-282585    19990331
PRAI US 1999-282585     A3    19990331
AB   A method and app. are provided for simulating a std. wafer in
     semiconductor manufg. equipment.  The app. includes a support layer
     suitable for being handled by the semiconductor manufg. equipment.
     Applied to the support layer is a mixt. including a process agent and a
     material.  During use, the present invention simulates a std. prodn.
     wafer including material similar to that in the mixt. of the present
     invention.
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L8 ANSWER 14 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 130:342171 CA
TI Modeling of toxic metal emissions from solid fuel combustors
AU Yousif, S.; Lockwood, F. C.; Abbas, T.
CS Thermofluids Section, Department of Mechanical Engineering, Imperial College of Science Technology and Medicine, London, SW7 2BX, UK
SO Symposium (International) on Combustion, [Proceedings] (1998), 27th(Vol. 2), 1647-1654
AB Particulate matter emitted from solid-fuel combustors may contain toxic metals in concns. sufficient to endanger health. Metal contents are enriched in the sub-micron fraction, the one most likely to avoid capture by conventional collection devices and the one capable of deep pulmonary ingestion. Math. modeling to predict toxic metal emissions from solid-fuel combustors and of metals partitioning with respect to particle size is described. This model accounts for particle formation and growth by the combined effects of coagulation and metal **vapor deposition** on particle surfaces. Based on exptl. evidence, particle size distribution is sub-divided into 2 ranges: the sub-micron fraction and much larger residual ash particles. Conservation equations are solved for the total no. and mass concns. of particles. The modeling is included in an existing procedure for solid-fuel combustors combustion and applied to predict Pb and Cd emissions from a lab. combustor fired with coal and wastewater treatment sludge. Predicted emissions of these 2 metals and the metals enrichment in the sub-micron class compared rather well with measured values. Discrepancies were attributed to the effect of gas-phase and surface chem. reactions that, in the absence of kinetic data, were not modeled.

L8 ANSWER 17 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 130:274539 CA
TI Epitaxial growth of RuO_2 thin films by metal-organic chemical **vapor deposition**
AU Lu, P.; He, S.; Li, F. X.; Ji, Q. X.
CS Department of Materials Science and Engineering, New Mexico Institute of Mining and Technology, Socorro, NM, 87801, USA
SO Thin Solid Films (1999), 340(1,2), 140-144
AB Conductive RuO_2 thin films were epitaxially grown on $LaAlO_3$ and MgO substrates by metal-org. **CVD** (MOCVD). The deposited RuO_2 films were crack-free, and well adhered to the substrates. The RuO_2 film is oriented on $LaAlO_3$ substrates at deposition temp. of 600° and oriented on MgO substrates at deposition temp. of 350° and above. The epitaxial growth of RuO_2 on MgO and $LaAlO_3$ is demonstrated by strong in-plane orientation of thin films with respect to the major axes of the substrates. The RuO_2 films on MgO contain 2 variants and form an orientation relation with MgO given by RuO_2//MgO and RuO_2[001]//MgO[011]. The RuO_2 films on $LaAlO_3$, however, contain 4 variants and form an orientation relation with $LaAlO_3$ given by RuO_2//$LaAlO_3$ and RuO_2[011]//$LaAlO_3$[011]. Elec. **measurements** on the **RuO_2** thin films deposited at 600° show room-temp. resistivities of ~ 40 and ~ 50 $\mu\Omega$cm for the films deposited on the MgO and $LaAlO_3$ substrates, resp.

L8 ANSWER 23 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 128:206428 CA
TI Hydride gas generator
AU Gordon, Roy G.; Chen, Feng
CS Harvard Univ. Chem. Lab., Cambridge, MA, 02138, USA
SO Proceedings - Electrochemical Society (1997), 97-25(Chemical Vapor Deposition), 1313-1318
AB The gaseous hydrides of elements, such as silicon, germanium, phosphorus, arsenic, antimony, selenium and tellurium, are widely used in chem. **vapor deposition**. These hydrides are extremely hazardous because they are highly toxic and, in some cases, spontaneously flammable. **Test** a method is proposed for reducing the **hazards** of using these gases by generating them rapidly from less hazardous reactants. For example, silane gas is made by reacting liq. silicon tetrachloride with a suspension of solid sodium hydride in tetraglyme along with a catalytic amt. of sodium tributylborohydride. The method can easily be extended to the other hydride gases mentioned above, and to their mixts. with silane.

L8 ANSWER 41 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 121:122944 CA
TI RuO2 thin films as bottom electrodes for high dielectric constant materials
AU Yoshikawa, Kohta; Kimura, Takafumi; Noshiro, Hideyuki; Otani, Seigen; Yamada, Masao; Furumura, Yuji
CS Advanced Technology Division, Fujitsu Ltd., Kawasaki, 211, Japan
SO Japanese Journal of Applied Physics, Part 2: Letters (1994), 33(6B), 867-9
AB **Ruthenium** dioxide (**RuO2**) thin films are **evaluated** as a bottom electrode for SrTiO3 in high-d. DRAM capacitors. A thin RuO2 (50 nm)/Ru (20nm) layer on Si is quite effective as a barrier layer for both oxygen atoms and metals when depositing SrTiO3 at a relatively low temp. of 450°C. To test its suitability for high-temp. processes such as **CVD** of SrTiO3, the RuO2/Ru electrode on Si was annealed in air at 600°C for 1 h. Even under this severe condition, the electrode using 100-nm-thick RuO2 was sufficient for preventing oxygen diffusion into Si.

L8 ANSWER 42 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 119:282475 CA
TI Chemical **vapor deposition** of ruthenium and osmium thin films using (hexafluoro-2-butyne)tetracarbonylruthenium and -osmium
AU Senzaki, Yoshihide; Gladfelter, Wayne L.; McCormick, Fred B.
CS Dep. Chem., Univ. Minnesota, Minneapolis, MN, 55455, USA
SO Chemistry of Materials (1993), 5(12), 1715-21
AB The known mononuclear ruthenium complex Ru(hfb)(CO)4, where hfb is hexafluoro-2-butyne, has a vapor pressure of 1.5 torr at 25° and forms reflective Ru thin films by chem. **vapor deposition** (**CVD**) using H2 carrier gas with a growth rate of 21 nm/min at 500°. The resistivity of a Ru film having a grain size of 60 nm was 22 μΩ cm. Auger electron spectroscopy (AES), XPS, and x-ray diffraction (XRD) **analyses** indicated

that the films were pure, polycryst. **ruthenium** (<1% C, O, or F). SEM and XRD analyses revealed that the deposition temp. and the presence of H_2 gas affect the microstructure and the resistivity of the films. Os(hbf)$(CO)_4$ afforded polycryst. Os thin films using H_2 as a carrier gas. A growth rate of 14 nm/min, a resistivity of 81 $\mu\Omega$ cm, and a grain size of 20 nm were found for depositions conducted at 600°. XPS anal. indicated that the film consists of 84% Os, 7% O, and 9% C. The new dinuclear metal complexes $[\mu\text{-}\eta 1:\eta 1:\eta 4\text{-}C_4(CF_3)_4](CO)_6$ (M = Ru, Os) were formed from M(hfb)$(CO)_4$ during the **CVD** processes conducted in the absence of H_2 gas at 150-300°.

L8 ANSWER 46 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 119:55093 CA
TI Application of **hazard evaluation** techniques to the design of potentially **hazardous** industrial chemical processes. NIOSH instructional module
AU Kavianian, H. R.; Rao, J. K.; Brown, G. V.
CS California State Univ., Long Beach, CA, USA
SO Report (1992), Order No. PB92-184290, 69 pp. Avail.: NTIS From: Gov. Rep. Announce. Index (U. S.) 1992, 92(16), Abstr. No. 244,638
AB The instructional module presents specific case studies which highlight the importance of applying system safety techniques to design and operation of potentially hazardous processes. When applied properly, these techniques can identify and rectify hidden system failure modes that would otherwise contribute to accidents. Descriptions are offered of 7 different techniques for **analyzing hazards**: preliminary **hazard anal.**, what if **anal.**, failure modes effects and criticality **anal.**, **hazard** and operability study, fault tree **anal.**, event tree anal., and cause/consequence anal. Preliminary design of 5 potentially **hazardous** processes was considered using several of these **evaluation** techniques. The processes included metal org. chem. **vapor deposition**, an ethylene prodn. facility, an alkylation process, a high pressure/low d. polyethylene facility, and the batch process of industrial and military explosive prodn. The importance of including **hazard evaluation** procedures at the senior level in all engineering courses was stressed.

L8 ANSWER 48 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 116:86914 CA
TI Use of the HAZOP analysis for evaluation of **CVD** reactors
AU Crawford, W. W.; Zuber, J. R.; Knolle, W. R.
CS AT and T Bell Lab., Allentown, PA, 18103, USA
SO Journal de Physique IV: Proceedings (1991), 1(C2, Proc. Eur. Conf. Chem. Vap. Deposition, 8th, 1991), C2/459-C2/466
AB A **hazard** operability (HAZOP) **anal.** for **evaluation** of chem. **vapor deposition** (**CVD**) reactors proved to be an effective tool. A sample HAZOP anal. and a short questionnaire that needs to be completed (before the HAZOP anal. begins) are given.

L8 ANSWER 49 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 115:173734 CA
TI Ruthenium sensor with an oscillator

IN Arai, Yuko; Honda, Taku
PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
PI JP 03048748 A2 19910301 JP 1989-183790 19890718
PRAI JP 1989-183790 19890718
AB The Ru sensor, esp. useful in nuclear fuel reprocessing plants, comprises an oscillator equipped with **electrodes** and org. films on an **electrode**. The shift in resonance frequency of the oscillator is detd., as RuO4 is reduced to RuO2 and deposited, causing a wt. increase on the org. film.

L8 ANSWER 52 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 111:15669 CA
TI Safety measures in chemical **vapor deposition** apparatus for semiconductors
IN Komura, Yukio; Koaizawa, Hisashi; Ikeda, Masakyo
PA Furukawa Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 63280414 A2 19881117 JP 1987-114486 19870513
JP 07073100 B4 19950802
PRAI JP 1987-114486 19870513
AB The title app. is provided with a const. supply of an inactive gas to envelop the reactor, which is housed in a cabinet which is, in turn, constantly evacuated, and, optionally, provision may be made to supply a large amt. of the inactive gas in case a leak of a **hazardous** gas is **detected**. Thus, N2 gas was supplied around a reactor into which GaMe3, AsH3, and H2 were supplied.

L8 ANSWER 53 OF 56 CA COPYRIGHT 2004 ACS on STN
AN 109:213510 CA
TI Interaction of safety and the facility for photovoltaic R & D
AU Gale, R. P.; Salerno, J. P.; Zavracky, P. M.; Brissette, W. P.
CS Kopin Corp., Taunton, MA, 02780, USA
SO AIP Conference Proceedings (1988), 166(Photovoltaic Saf.), 145-51
AB Material handling procedures (chems. and wastes) at the Kopin Corp., in manuf. of GaAs/AlGaAs solar cells by metalorg. chem. **vapor deposition** are described, as are the safety features of the facility. Feedstock handling (acids and bases, H, Me3Ga, Me3Al); waste handling procedures at point-of-use and transport to collection points for off-site treatment, toxic material collection (As, GaAs); and safety systems (spill control, process alarms, and fire alarms) are described. The process alarm system **monitors** GaAs deposition and includes smoke, H, and **toxic** gas **detection** as well as room and building evacuation alarms and automatic H shut-off.

=> d bib,ab l11 1-22

L11 ANSWER 3 OF 22 CA COPYRIGHT 2004 ACS on STN
AN 127:198104 CA
TI Low temperature vapor phase epitaxial system for depositing thin layers of silicon-germanium alloy

IN Crumbaker, Todd E.
PA United States Dept. of the Air Force, USA
SO U.S., 6 pp.
PI US 5653807 A 19970805 US 1996-623593 19960328
PRAI US 1996-623593 19960328
AB An epitaxial film deposition system has a low vacuum venturi pump for initially partially purging the system of toxic gases, and a high vacuum turbo-mol. pump to further sharply reduce the pressure to maximize **toxic** gas purging along with the **detection** of any slight **leaks** of **toxic** gases in the system. A source gas mixing manifold has an array of gas feed lines laid out in a rectangular array for forwarding the gases to the **reactor** furnace, wherein each feed line has an equal path length between each run valve of the mixing manifold and the **reactor** to minimize switching transient variations.

L11 ANSWER 5 OF 22 CA COPYRIGHT 2004 ACS on STN
AN 121:268061 CA
TI Growth of pseudomorphic ZnSe/(100)GaAs by atomic layer epitaxy
AU Lee, Chae Deok; Lim, Chan; Lim, Byung Ho; Noh, Min Soo; Park, Hong Lee; Chung, Choong Hyun; Chang, Soo Kyung
CS Dep. Phys., Yonsei Univ., Seoul, 120-749, S. Korea
SO Ungyong Mulli (1992), 5(4), 412-17
LA Korean
AB The ALE (at. layer epitaxy) growth system, a film growth system with control at the monolayer level, was constructed, focusing on the design of **reactor** and susceptor. The ALE system has 4 subsystems: (1) the gas feed system, the role of which is to keep the source gases safely and to transfer gas to the **reactor**; (2) the **reactor** system including the susceptor for the alternative supply of source gases; (3) the exhaust system through which all gases, reacted or unreacted, are exhausted; and (4) the **toxic** gas **detection** system for **detection** of **leakage** of **toxic** source gas (i.e. H2Se).

=> log y
STN INTERNATIONAL LOGOFF AT 15:09:36 ON 04 MAY 2004